

## What is Claimed is:

- [c1] Apparatus comprising: a pipeline of elements processing print control data and having: a plurality of print head drivers, each of which controls the application of colorant to a sheet and has an input port receiving data signals; a plurality of raster image processors, each of which has an output port communicating with the input ports of said plurality of print head drivers to deliver thereto data signals controlling the application of colorant to a sheet and an input port receiving parsed page data; and a sequencer which has an output port which communicates with the input ports of said plurality of raster image processors and an input port receiving a print data stream, said sequencer monitoring data flows among the pipelined elements and parsing a print data stream into local data portions related to individual pages and global state data portions related to characteristics shared across a plurality of pages, said sequencer packaging together parsed page local and global state data portions; said raster image processors processing in parallel packaged parsed page data related to a plurality of pages and generating data signals to be communicated to said print head drivers as directed by said sequencer.
- [c2] Apparatus according to Claim 1 wherein said sequencer queues packaged individual page data to be communicated to said raster image processors and further wherein individual ones of said raster image processors draw from said queued data as processing of data related to an individual page is completed and generated data signals are communicated to a print head driver.
- [c3] Apparatus according to Claim 1 wherein each of said raster image processors converts data from a form communicated as a print data stream to a form to be communicated as data signals to a print head driver.
- [c4] Apparatus according to Claim 3 wherein each of said raster image processors converts data from a form communicated as a print data stream into a variable number of portions depending upon whether an individual page is to be blank or be printed with a single color or to be printed with multiple colors.
- [c5] Apparatus comprising: a pipeline of elements processing print control data and having: a plurality of print head drivers, each of which controls the application

of colorant to a sheet and has an input port receiving data signals; a plurality of raster image processors, each of which has an output port communicating with the input ports of said plurality of print head drivers to deliver thereto data signals controlling the application of colorant to a sheet and an input port receiving parsed page data; and a sequencer which has an output port which communicates with the input ports of said plurality of raster image processors and an input port receiving a print data stream, said sequencer monitoring data flows among the pipelined elements and parsing a print data stream into local data portions related to individual pages and global state data portions related to characteristics shared across a plurality of pages, said sequencer packaging together parsed page local and global state data portions; said plurality of raster image processors processing packaged parsed page data related to a plurality of pages in parallel and generating data signals to be communicated to said print head drivers as directed by said sequencer, each of said raster image processors converting data from a form communicated as a print data stream into a variable number of bit maps depending upon whether an individual page is to be blank or be printed with a single color or to be printed with multiple colors.

- [c6] A method comprising the steps of: receiving a print data stream and parsing the stream into local and global portions; packaging together parsed local and global print stream data portions; queuing packaged print stream data portions; communicating queued packaged print stream data portions to a plurality of raster image processors; processing a plurality of communicated packaged print stream data portions in parallel to generate print head driving data signals; and communicating the generated print head driving data signals to the print heads of a printer.
- [c7] A method according to Claim 6 wherein said step of packaging print stream data portions comprises packaging portions applicable to individual pages.
- [c8] A method according to Claim 6 wherein said step of processing comprises generating bit map data signals.
- [c9] A program product comprising: a computer readable medium; and program

instructions stored on said medium accessibly to a computer system and effective when executing on the computer system to cause the system to: receive a print data stream and parse the stream into local and global portions; package together parsed local and global print stream data portions; queue packaged print stream data portions; communicate queued packaged print stream data portions to a plurality of raster image processors; process a plurality of communicated packaged print stream data portions in parallel to generate print head driving data signals; and communicate the generated print head driving data signals to the print heads of a printer.